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ABSTRACT

This study used the think-aloud methodology on six Canadian fourth graders to promote the use of reading strategies in their first and second languages as part of a bilingual process-based remedial reading program. Students' English and French reading levels were established at baseline and reexamined at the end of the intervention. Pre- and post-intervention interviews determined students' reading strategies, and parents also identified students' reading strategies. A list of comprehension and repair reading strategies was developed for second language reading development. Students read and responded through thinking aloud to 10 texts. Data were collected in three parts to coincide with the three initial phases of each treatment: reading miscue analysis of the initial reading of each text, retrospective commentary on the reading process, and coding of the online introspective responses to the miscues and retracing how students developed and sustained their ideas about the topic. The intervention increased children's reading accuracy in the target language. Accuracy scores fluctuated depending upon students' prior knowledge about the topic of the texts in both languages. Students related to their background knowledge, created more images, and retraced the text development more frequently when reading in their first language. (Contains 48 references.) (SM)

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The Effects of L1 & L2 Think-Aloud Methodology on the Development of Reading Strategies at the Early French Immersion Level

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Running header: LIH, TAM & Reading Strategies

ABSTRACT

Think-aloud methodology (TAM) was used on six students to promote the usage of reading strategies in both their L1 and L2 as part of a bilingual process-based remedial reading program. Application of the Linguistic Interdependence Hypothesis (Cummins, 1979), the use of metacognition and metalinguistic awareness in conjunction with promoting the use of reading strategies through discussion and error analysis collectively are found to have a positive influence on low functioning Early French Immersion readers' reading abilities in both L1 and L2. The results of the three students who made the most gains are presented and discussed. A model for biliteracy development is presented. This interactive process-oriented approach to remedial L2 reading is rich with potential at a time when eclectic teaching and learning methods lead the way in integrated content and language L2 education programs.

KEY WORDS: Biliteracy, metacognition, metalinguistic awareness, reading strategies, verbal processing

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INTRODUCTION

One has only to browse through the literature on second language education to be reminded of the continual quest for perfecting second language learning by improving teaching methods. For the most part, research focuses on average learning situations in French Immersion (FI) classrooms at the Intermediate level or higher. One group of students not accounted for in second language proficiency studies are those learners at the bottom of the spectrum in the Primary and Early Intermediate grades. Low functioning students are usually withdrawn from the Immersion program before they reach the Intermediate grades in an attempt to give them some grounding in early literacy skills in their own language. Despite the plea for developing a form of early detection of students having language-related difficulties in FI (Lapkin, Swain, & Shapson, 1992, p. 405), there has been a paucity of literature on remedial programs for students in the Early FI program.

In this article, findings from research on the effects of integrated language and content instruction are presented. The following three themes structure the research: 1) the application of the Linguistic Interdependence Hypothesis (LIH); 2) the function of meta-cognition and meta-linguistics; and 3) the effect of discussing reading strategies as an application of think-aloud methodology (TAM).

1 The Application of the Linguistic Interdependence Hypothesis

The premise behind the LIH, advanced by Cummins (1979), states "Reading performance in a second language is largely shared with reading ability in a first language" and according to this hypothesis, when a language operation such as reading or writing has been acquired in a language, the same operation is not "reacquired" in a second language. The operation is simply available upon need (Bernhardt & Kamil, 1995, p. 17). LIH evolved from the Common Underlying Proficiency which posits that language operations such as reading and writing are transferable and intertwined.

One aspect which is problematic with regard to LIH and L2 research is that, if there is indeed an interdependence between L1 and L2, any claims about the nature of L2 development

might not be authentic. "Measurement of individual subjects' performance would inevitably involve a confounding of L2 and L1 ability" (Bernhardt & Kamil, 1995, p.18). Any achievements said to occur, therefore, would necessarily represent mixed results of the two languages and two literacies. Conclusions about either, then, would be dependent on both languages.

2 Meta-Cognition and Meta-Linguistic Awareness

Being conscious of one's own activities while involved in higher order thinking skills such as problem solving or cognitively demanding tasks such as reading, and the ability to reflect on one's own cognitive processes has traditionally been considered to be "a late developing skill with important implications for the child's effectiveness as an active, planful learner" (Baker & Brown, 1984, p. 353). More recent research has involved participants from preschoolers to college and university--thus all levels of literacy development--in cognitive tasks (Armand, 2000; Bialystok, 2001; Francis, 1999; Wenden, 1998, p. 516). Most of the research questions whether the youngest students in the school system are capable of responding to literacy tasks presented in ways which until recently had been reserved for psychometric experiments and assessments. The application of cognitive psychology is entering a new phase in exploration as a possible tool in aiding L2 learners and results until now have been vaguely conclusive. The level to which children are aware of their own limitations as learners or the complexity of tasks will influence the degree to which they are able to take preventative actions in order to anticipate or recover from academic problems. Effective learning requires active monitoring of one's own cognitive activities. Failure to monitor may lead to serious reading problems.

The term metacognition has been defined as (a) knowledge about cognition, (b) regulation over cognition, and (c) the development and use of compensatory strategies. Knowledge about cognition is concerned with peoples' knowledge about their own cognitive resources and the compatibility between people as learners and the learning situation. The information read remains stable and learners are called to reflect on the processes involved in dealing with the information (e.i.: ordering, prioritizing, categorizing, etc.) and to discuss these

processes with others. Regulation over cognition refers to the self-regulatory mechanisms actively used during problem solving or reading; including checking, planning what to do, monitoring the effectiveness of any action, and testing, revising, and evaluating one's strategies for learning.

Baker and Brown (1984) concur that one of the most influential trends in developmental cognitive psychology has been a growing interest in children's metacognitive status, that is, the knowledge and control children have on their own thinking and learning activities, including reading. Despite this trend, the majority of the studies reported involve adult L2 learners (Conner, 1987; Carrell, Pharis & Liberto, 1989; Langer, Bartolome, Vasquez & Lucas, 1990; Frederiksen & Donin, 1991; Cohen, 1994; Lynch, 2001) or involve isolated, language specific tasks (Francis, 1999; Bialystok, 2001). The use of meta-cognition has been found to be effective in enhancing reading abilities in both L1 and L2. In theory, the mutual facilitation and reciprocal causation of literacy development and metalinguistic development at the middle childhood cognitive development stage suggests that there could be some benefit to encouraging metalinguistic usage (Francis, 1999, p. 536). The over-all effectiveness of training is related to the learning styles of the students. So few studies have applied the benefits of metacognition or metalinguistic awareness at the elementary level to date. It is not known to what extent developing a learner profile of metacognative knowledge will assist the learner in completing language tasks (Wenden, 1998, p. 531). Hence, the current study has been devised to study the influence of the use of metacognition and metalinguistic awareness in early Intermediate (Grade four) learners.

One of the issues in gathering information from students about the reading passages they are working on--and about how their thoughts change as they complete a comprehension exercise--is the choice of language to use in responding. Usually the native language is used in order to avoid interference of nonnative's proficiency in the target language (Cohen, 1994, p. 125). This, however, may be more demanding for certain learners, as they are being asked to think through a task in the target language and then to recode their thoughts in order to report on

their cognitive processing in another (usually L1) language. The difficulty here is that information may be lost due to the limits of the memory capacity as well as other factors such as accuracy in translating thoughts. When a reading passage was read in English, the topic was discussed in English and the retrospective analysis was conducted in English. Likewise, when the think aloud was presented in French, the topic was discussed in French and the retrospective analysis was conducted in French.

Another issue in eliciting verbal reports is that it may have an intrusive effect on respondents. Immediate retrospection may distort the process if the readers change their style of reading (i.e.: they may read more closely than usual, or they may be distracted by the task of reporting). Finally, it may be difficult to know whether respondents truly understand the text, as their verbal report may copy material and their summary may include linguistically awkward responses (Cohen, 1987, p. 146). If, however, the data source for studies of conversation or children's language is natural language in context (Guthrie & Guthrie, 1987, p. 207) and is elicited with care and interpreted with full understanding of the circumstances under which it is obtained, the verbal reports are a valuable and a thoroughly reliable source of information about cognitive processes (Ericsson & Simon, 1980, in Cohen, 1994, p. 126).

3 Enhancing reading abilities: Using reading strategies

Second language learners are challenged in dealing with two processes as they read; 1) decoding and 2) L2 deciphering. Studies surrounding the two phenomena jointly have increased over the last decade and reveal findings which underscore the importance of a solid foundation in reading and thinking in a first language and also a good grounding in the L2. Enhancing reading abilities in an L2 depends on a variety of factors including preschool practices (Wagner, Spratt & Ezzaki, 1989), individual differences in cognition, personality traits (Genesee & Hamayan,1980; Verhoeven & Extra, 1983), L1 competence (Langer, Bartolome, Vasquez & Lucas, 1990), a minimum L2 threshold being attained (Genesee & Hamayan, 1980; Carrell, 1991; Armand, 2000), promoting ways of thinking before reading or while reading (Goldman, Reyes & Varnhagen, 1983; Harley, Hart & Lapkin, 1986; Kendall, Lajeunesse, Chmilar, Shapson

& Shapson,1987; Carrell, Pharis & Liberto, 1989), mastery of domain knowledge (Wenden, 1998, p. 528), ensuring text content, cultural relevance and text structure are compatible with the reader (Donin & Silva, 1990; Langer et al, 1990; Davis & Bistodeau, 1993). Some studies report the positive influences of interactive collaboration on L1 and L2 (Baumann, Jones & Seifert-Kessell, 1993; Muniz-Swicegood, 1994) given that a basic mastery of listening and reading skills is attained in the L2. L1 and L2 comprehension reflect relatively equal use of relevant knowledge, which suggests that experience and background knowledge can be called upon nomatter what language is being used to trigger recall. The bottom line is that most elementary level learners do eventually progress from teacher-led to independent reading with appropriate training (Tardif & Couturier, 1993). This is a sure sign of increasing learner autonomy--reading mastery which is not gained without pitfalls for lower ability learners.

In current models of reading, reading is viewed as the active construction of meaning, whereby "the reader integrates new knowledge derived from the text with his or her background knowledge in ways that make sense" (Wade, 1990, p. 442). This background knowledge generates schemata--the theories we hold about events, objects, and situations. Each schema provides a template for understanding incoming data. Schemata, then, influence the way new information will be interpreted. As a reader tries to make sense of text, they fit the incoming information against the template (i.e. their background knowledge). This is often referred to as "top-down" reading strategy. The way readers interpret what they read will direct them to either modify or reject the information or search for a new way of understanding what they read. In order to set effective reading strategies into action, comprehension monitoring needs to be activated. In a second language context, building up a learner's bank of experiences provides a base on which to connect meaning and to ensure a strong association with new concepts. This would make meaning easily accessible from long term memory for automatic functional use purposes. New incoming ideas or information in a different language determine whether a chunk of language will be treated either 1) by dealing with the idea using rule-based procedures applied at the cognitive stage (integrating the new information in ways that make sense) or 2) by

processing language the learner is ready to acquire, using procedures at the associative or automated stage (which represents vocabulary acquisition) (O'Malley, Chamot & Walker, 1987, 302-303).

In order to hone in on reading strategies which hold the most potential for improving reading abilities for students who are not meeting the expected outcomes for their grade level, it is important to identify the skills which effective readers activate. These skills include: (a) clarifying the purposes of reading through understanding both the explicit and implicit task demands; (b) identifying the important aspects of a message; (c) focussing attention on the major content rather than trivia; (d) monitoring ongoing activities to determine whether comprehension is occuring; (e) engaging in self-questioning to determine whether goals are being achieved; and (f) taking corrective action when failures in comprehension are detected (Brown, 1980, in Baker & Brown, 1984, p. 354). Furthermore, reading for meaning involves the metacognitive activity of comprehension monitoring, which entails (a) keeping track of the success with which one's comprehension is proceeding, (b) ensuring that the process continues smoothly, and (c) taking remedial action if necessary (Baker & Brown, 1984, p. 355). A more thorough description of the strategies is given in Table 1 on page 12.

The use of reading strategies seen as a whole on a continuum suggests that they may be called into play as needed in completing reading tasks (Cohen, 1987). While reading fluently, readers' top-down (global) and bottom-up (phonetic based) skills are considered to be fluent. It is only when a "triggering event" alerts the reader to comprehension failure that they consciously put their metacognitive experiences into play (Baker & Brown, 1984, p.p. 356-357). Many reading strategies are observable, but several also need to be accessed or verified through verbalization. This suggests that a high degree of inference is still called for in order to interpret which strategy is being used at any point, and, therefore, studying children as they read and make sense of text may well provide the necessary data for assessing how text is processed. The use of a checklist may be useful in streamlining data collection and reporting on reading strategy use. (See observation sheet: Appendix A).

The use of Think-Aloud Methodology

As a complement to classroom observations and other formal and informal measures of assessing students' progress in course content and language acquisition, the use of learner reports of their own insights may be incorporated with their self-evaluation. Unfortunately, due to the focus on students' product rather than process for assessment purposes, the use of verbal reports has remained virtually untouched by classroom teachers. Of the "learners' reports data" available for study, introspective and retrospective self observations were chosen for this study. Introspection involves verbalizing as a task takes place in short term memory. It is considered a process-based approach to tracking the strategies used by readers. Retrospection involves either immediate or delayed reflective reporting which takes place after the task--in this case, the act of reading--is complete. As was discussed earlier, retrospection may distort the process of eliciting verbal data. Having students think about text comprehension requires the speaker to "change their thought sequences in order to generate and verbalize overtly the information requested" (Ericsson & Simon, 1994, p. xviii). After the student connects ideas from a passage they have read to their background knowledge, the information is recoded into a verbal code. The students in the current study were tape recorded as they initially read the passages presented to them and again a second time as they discussed the reading passages. The collection of both of these utterances became the hard data (verbal protocol) used for analysing reading comprehension. The intent of introspective and retrospective reports is actually to have the students develop control over their language development as well as to gain responsibility for their own learning.

The processes involved during reading to remediate breakdowns in fluency and comprehension have been easier to analyse with TAM (Wade, 1990). TAM has been found to be (a) practical for L2 teachers due to the detailed information which can be gleaned; and (b) useful to L2 students in helping them gain insights about themselves as learners, allowing them to control, monitor and refine strategies they apply while reading.

In this research project, the development of reading strategies of six participants is studied over a three month duration. The study grew out of a need to (a) evaluate the success of

a holistic approach to Language Arts instruction that had been adopted in British Columbia's Public Education system; (b) apply the benefits of dual-literacy in a bilingual remedial reading program; and (c) assess reading growth and development through an oral, process-based activity rather than an end product such as a series of questions to answer. The current study has been devised with the hypotheses that training in the use of think alouds in two languages will enhance reading strategy use in both languages. As it is not known to what extent involving young learners in monitoring their reading abilities actually assists them in managing printed input, this younger population was targeted here. Thus the three strands of 1) LIH, 2) using meta-linguistic and meta-cognitive feedback, and 3) promoting the use of reading strategies as part of the TAM are combined in this study to answer the following research question: What are the changes in students' use of reading strategies in an L1 and an L2 over time when using TAM?

THE STUDY

RESEARCH DESIGN

The study is fundamentally qualitative in design with a quantitative component. Data was collected with what Becker (1970) calls "quasi-statistics"--simple counts of things to support claims that are implicitly qualitative (Maxwell, 1992, p. 287). In this study, both 1) running records of reading and 2) an inventory of reading strategy use were tabulated. The effect of instruction in the use of strategies on lower achieving students using TAM was further monitored through 1) taking a count of strategy use throughout the treatment phase of the research, and 2) the use of pre and post intervention interviews conducted with each participant.

The study took place over a six week period in the fall of 1997. As is explained in more detail under "sample treatment", the study is composed of a series of 10 treatments, each of which is divided into three segments; 1) the initial reading of a progressively presented text; 2) the analysis of the initial reading (introspection) and the ensuing discussion or stimulated recall about the text topic--which were tape recorded; and 3) a brief retrospective analysis (or reflection) in the form of a discussion with the student then took place in order to discern how the student developed their ideas about the text topic. Running records were taken on initial

passage readings. The counting and categorizing of miscues was completed in March 1998. Forty-one hours of transcribed initial readings with on-line introspection were analyzed beginning in September as the data was collected. [1]

The French transcriptions were typed by a francophone transcriber. Half of the English transcriptions were typed by an anglophone secretary and the other half by the researcher. All of the transcriptions were reviewed for accuracy by the researcher. To readily differentiate between the original reading of the text and any ensuing discussion, two fonts were used, as is shown in the sample below.

000 Regular font = Initial Reading of the passage
000 Italic font = Introspection Commentary Discussion

Treatment #01 Text: Fr 01 October 9, 1997 Participant: F02 Topic: le camping

029	F02	Suff...
030	I	Il faut lire lentement ici. Utilise ton doigt. /Su..ffi..sa..ment/...
031	F02	/Su..ffi..sa..ment/...
032	I	Suffisament /gros/...
033	F02	/gros/...
034	*I*	*Ça veut dire "assez gros".*
035	F02	Pour app..ro..ter...
036	I	Utilise ton doigt. /A..ppor..ter/...
037	F02	/A..ppor..ter/...

This shows participant F02 trying to read about the need to bring along a knap-sack large enough to carry all of the camping gear. While the initial reading took place, F02 was instructed to read slowly and to follow along with her finger. In the introspection phase of the reading analysis the researcher used a circumlocution to explain that "suffisament" gros meant "assez gros".

In order to establish whether the treatments were having an impact on the students' thought processing and language development, the frequency of child-initiated responses and the occurence of uptake of vocabulary from the text used in the discussion about the passage topic immediately after each section of the initial reading of the ten think aloud treatments were counted for reading in the L2 only.

PARTICIPANTS

This study was conducted in a small city in Western Canada. The community is predominantly of English speaking middle class background. The six participants for this study were enrolled in Grade Four of an early French Immersion program and were identified by their classroom teacher as having difficulty in reading in their L2 and difficulty with school work in general. The classroom teacher's decision regarding which students to involve in the study was supported by the school's French Immersion Learning Assistant Teacher (LAT). Written parental permission to commence the study was obtained.

Participants were numbered F (female), F01, F02 and F03, and M (male) M01, M02, M03. All six of these students completed the pre-treatment reading passages, the10 treatments and post-treatments. Subsequently, a more detailed analysis of the verbal protocols for F02, F03 and M02 were made, as these students made the most gains over the course of the study.

All of the students were additive bilinguals. M02 was considered an additive bilingual, L1 minority in this community, his L1 being French and his L2 being English. This L2 difference was not considered to be significant as MO2's L2 Reading scores were in the range of the scores of the other participants' L2 Reading scores. Throughout the discussion, therefore, whenever generalizations are made with reference to the participants' L1, M02's results are considered with reference to his L1 as being French.

A history of reading interventions initiated for each of the students involved in this study was traced by speaking with the school's French Immersion LAT. It was discovered that reading intervention was provided for one student only in the final month of data collection and this was not found to influence the results of the study.

METHOD

1 Collecting a Baseline Reading Level

A baseline reading level of the participants' English reading ability was established using the Alberta Diagnostic Reading Test. This test was chosen 1) because the passages had been graded (standardized) and are widely used for Reading assessment purposes in Western Canada; 2) for its oral reading component and interactive features; 3) to conduct a miscue analysis; and

4) to see how the students responded to various types of comprehension questions in English. A sample of their French oral reading was obtained using a mid-to-end of Grade Three narrative text. Two texts with similar levels of vocabulary were selected by the researcher from "Les récits du lundis" (Éditions Marie-France). The series has not been adapted for use in Immersion classrooms, however the vocabulary was previewed for any potentially difficult words. The stories were also selected because of their appeal to students of this age group. Comprehension questions were presented in French. Four questions were either chosen or adapted from the exercise book which accompanies the series, or questions were composed by the researcher. The aim here was to observe how the participants responded to various types of questions in French including general recall of details, infering, synthesizing and analyzing. A miscue analysis using the mid-to-end of Grade Three level text "Les acrobats de ma rue" was conducted.

The same process was repeated at the end of the treatments using similar texts from the same sources. The miscue analysis of L1 and L2 reading samples were used as a basis of pre- and post-treatment comparison for all the participants of the study.

2 Taking an Inventory of Reading Strategy Use

Two approaches were taken in order to ascertain which reading strategies were being used by the students prior to commencing the treatments and then to evaluate whether more or different strategies had been adopted by the readers after the treatments. Firstly, pre- and post-treatment interviews were conducted, and secondly, the parents were asked to identify any reading strategies they found their child using by completing a questionnaire prior to the treatments beginning and again after the treatments were complete. The questionnaire included both open-ended questions and more direct "yes" and "no" type questions which guided the parents in identifying reading strategies. The parents had no previous training with regards to identifying or promoting the use of reading strategies.

After a review of six sources (B. C. Ministry of Education, 1991, 1991, 1994; Rhodes, 1993; Wade, 1993; Campbell, 1995), and finding various lists of strategies prepared for particular groups of readers--which were neither exhaustive nor fully applicable to young

developing readers who are simultaneously gaining fluency in a second language--the reading strategies listed in Table 1 (page 12) were identified by the author as those that hold the most potential for use in second language situations at the developing level of reading (i.e.: late Primary and early Intermediate levels).

The top-down and bottom-up reading strategies listed may also be referred to as comprehension and repair strategies. Nine bottom-up strategies and eight top-down strategies were identified for a total of 17 comprehension and repair strategies in all. Some of the verbal protocol could be catagorized under more than one heading and were classified as such by the researcher. Eight more supportive and affective strategies were identified and included in pre and post interview questions. They are not reported on here as this article is concerned with reading strategies in use.

Table 1 Reading Strategies

L1 & L2 Reading Strategies

Bottom-up Processes

1. Omission: Words and/or phrases are skipped on purpose as their meaning becomes clearer later in the text.

2. Omission and return to read and sound out: Words and/or phrases are skipped, then the reader returns to read them or phonetically decode them.

3. Use of 1) sentence level context in order to figure out a word, which denotes a global perspective or 2) sentence structure (grammar and/or punctuation) whereby the reader relies on their knowlege of grammar (e.g.: a word ending in an "s" or "es" in French) and/or the punctuation to read. At times this is a natural occurance, at other times this strategy is explicitly referred to.

4. Examines word parts: Words are either 1) made noticable through emphasized pronunciation, 2) examined for the resemblance or the difference they have to similar words or 3) smaller words are located within larger words.

5. Sounds out words phonetically: Knowledge of phonics is applied to decode words. Phonemic blends such as multiple vowel or consonent-vowel combinations or "word families" may be reffered to in order to trigger the noticing of spelling patterns.

6. Spells out words: Words are spelled out letter by letter or reference is made to the order of letters in a word.

7. Word match in other language or translates: Reference to other similar words the student knows in another language is made or a direct translation is made.

8. Attends to speed: Reader attends to their speed of reading, slowing down in order to attend to the letters in the word or speeding up to gain a fuller sense of what they are reading. Either the participant is directed to by the researcher because they are reading too quickly or reference to the speed of reading is made in order for the reader to gain fuller meaning.

9. Consults outside sources to read: Words are "given" by the researcher or the student asks outright for a word to be read.

Top-down Strategies

1. Seeks word meaning: The meaning of a word is explained for a student in an attempt to clarify the content of the passage; or a student outright asks the meaning of a word.

2. Makes a prediction: A prediction is made as to the topic of the reading passage. This can be either student-initiated (the "ah ha!" in recognizing the text topic) or the researcher may prod the student with questions as to whether they have any ideas as to what the think aloud may be about.

3. Supports hypothesis by linking text ideas: The hypothesis about what the text topic may be was subtantiated by referring to supporting ideas read in the text, whether the hypothesis was correct or not. This strategy was either used spontaneously by the student as they spoke about the text topic or ideas were prompted through questioning by the teacher/researcher. Questioning was either open-ended or closed.

4. Projects self into character or situation: Either 1) the student declares that they imagine something similar as to what is presented in the text could happen to them and what they would do under such circumstances; or 2) the researcher directly asks what the student would do if they were the person in the text; or 3) the student engages in imaginary play/projected imaginary discussion with the text topic or information.

5. Relates to background knowledge: Either 1) the text triggers a memory when the student declares that an idea from the text reminded them of a happening in their past or they give substantiative, detailed information regarding a previous situation. Evidence for this may be further pried by the researcher with questions such as "What made you think that?" or "What gave you that idea?"; or 2) the teacher uses background knowledge in an attempt at a vocabulary lesson by giving examples of possible situations where the student may have used or heard the vocabulary in order to trigger background knowledge.

6. Creates image: The student either explicitly discribes an image while referring directly to the text content, or the student makes a reference to an image they have in their mind which demonstrates their explanation of what the text comprises. The teacher/researcher may also question the student directly as to any images they created as they read, reviewing the text and asking the student to tell them about any points in the text which conjurred a vivid TV-like image and what that image was.

7. Retraces text development: The development of the text was reviewed. This could be either 1) student-initiated as part of the solution to the text topic, or 2) it may be researcher-prompted as a review of previously read text segments, serving as part of the explanation of the text development, synthesizing the different sections of the passage.

8. Recodes: Words, series of words or phrases are repeated by the student after they are read for the student. This involves decoding (reading) the word and enunciating it.

3 Coding and Counting the Responses

Coding the frequency of student initiated and teacher/researcher initiated

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responses was done with the verbal protocol taken while the participants were performing the initial reading in their L2.

Counting the responses while students initially read each of the three segments of text presented during each treatment provides an idea of the students' true L1 and L2 performance capabilities in reading, that is, uninterrupted and unaided by outside sources (i.e. from other students or teacher prompted responses). The reading passages were written in such a way that the topic is not revealed until the third (final) segment. Part of the analysis of the text included figuring out the text topic based on descriptive clues and/or stated facts that were elaborated on throughout the three sections of each reading passage. This type of text allows for discussion of possible text topics and encourages readers to search their background knowledge and relate new information to an evolving topic. The texts were written by classroom teachers as part of a district wide reading assessment initiative. The verbal protocol for such an analysis was gathered while students were actively engaged in figuring out the topic of the reading passages.

In addition to tracing the development of reading strategies, the study of verbal protocol also allowed for a close look at L2 development. In order to differentiate between input processing (acquisition of the L2) and L2 production (access to the L2) (Salaberry, 1997, 426; Sanz & VanPatten, 266), a count of student-initiated and teacher-initiated corrective utterances was taken and the verbal protocol was reviewed for indications that the same vocabulary was being accessed by the learner in their own lexicon for the purposes of explaining their ideas about the text topic. This signifies language uptake. The scope of this article does not permit a discussion of these findings.

SAMPLE TREATMENT

The participants each read and responded through thinking out loud to ten texts similar to the one appended (see sample reading passage, Appendix B).

Each treatment may be broken into four basic steps as follows:

Step 1: Initial Reading and Introspective discussions

The text was progressively presented to the reader, one segment at a time. The reader was asked to explain what they thought the text was about and why they thought so after reading each segment--which was usually three to five sentences long. The student then either continued to build on their original idea or they dismissed the idea and formulated a new theory. These initial readings and the introspective disscussions about each segment of text were tape recorded.

Step 2: Retrospective Observations

After a text was read in full, the treatment included having the student listen to their initial reading of the text while silently reading along with the tape. The recording was stopped to allow the participant to identify their miscue, or to correct their mistakes if they were able to. Either they noted miscues independently or the researcher indicated that there was an error. This process was recorded, which produced an on-line introspective commentary on the reading process.

In this retrospective phase, the participant could spontaneously comment on his or her thinking-aloud utterances. The questions for this interview were not planned in advance to maintain flexibility in each situation depending on how the participant responded. The objectives of this retrospective interview phase are two-fold. First, it was intended to provide immediate communicative validation of the interpretation of the thinking-aloud data by the student. Its second objective was to elicit additional information about text topic identification processes during the think-aloud phase, with the student's primary interest in figuring out the topic of the text. These retrospective observations were recorded and later analysed and coded with regard to the comprehension and repair strategies used by the learner.

Step 3: Reflection on the Treatment and Progress Check

A brief retrospective analysis in the form of a discussion with the student related to how the student developed their ideas about the text topic then took place. The students' self observations on their progress were also recorded and noted (see Appendix A).

Step 4: (This is an additional step for some participants)

A written descriptive analysis of the initial reading and the think alouds done in the students' target language was completed by the researcher for the participants who made the most gains, F02, F03 and M02. In this context, the initial reading was reviewed to calculate the number of strategies which were applied to assist readers in decoding and comprehending the passage. The text responses were analysed with regard to the frequency of processed or formulated responses, including the frequency of child-initiated responses made while performing the think alouds after the initial reading of each segment of text.

The following TAM guidelines were applied for this study:

1. The texts were presented one section at a time. In order for the students to handle the texts more easily, the texts were cut into three sections and made into booklets.

2. The purpose was set by explaining to the student that they would be reading out loud and that they could stop at any point to think out loud about what the text may be about. Information was elicited after each section by asking general questions such as: What do you think this could be about?

Questions which induced elaboration were also asked in an effort to have the readers explain their predictions. The following are samples of such questions: How do you know that? What made you think of that? What else can you tell me? Describe what you were thinking... Can you remember something...?

3. Although from the outset I intended to refrain from helping the participants read difficult vocabulary, during the earlier treatments I encouraged them to use strategies they would use when reading alone with no one available to ask for help with a hard word (i.e.: leave it out, read on, reread the line, sound it out, make a prediction based on initial sounds and what they have read, that is, the context).

4. The child did not reread the text before thinking out loud about the text, however the reading passage was available for them to refer to as they explained their decisions about the passage development.

DATA COLLECTION

The data was collected in three parts to coincide with the three initial phases of each treatment: (a) reading miscue analysis of the initial reading of each text (the author adapted the miscue analysis suggested in Journeys, Ginn Publishing Company, 1990, p. 33 and developed a formula for calculating % of accuracy and % of error); (b) a retrospective commentary on the reading process, including a brief analysis of the discussion related to how the students developed their ideas about the text topic; and (c) coding of the on-line introspective responses to the miscues and retracing how the student developed and substantiated their ideas about the topic. This last section refers to the use of bottom-up, top-down and bi-directional reading strategies.

Calculating the Percentage of Accuracy and the Percentage of Errors for Reading Passages

In the formula used to calculate the percentage of accuracy and the percentage of error in reading, the following terms are used:

RW = running words or the number of words in a passage

E = Errors including
- substitutions and unrecognizable utterances
- repetitions
- omissions and teacher given responses
- insertions
- false starts

SC = self corrects

The Percentage of Accuracy (% A) was calculated by implementing the following formula:

$$[\,RW - (E - SC)\,] \times 100 \div RW = \%\,A$$

Percentage of errors (% E) was calculated by implementing the following formula:

$$(E - SC) \times 100 \div RW = \%\,E$$

FINDINGS

Table 2

Percentages of Accuracy and Error

The following tables present the scores obtained for the three students involved in this study who made the most gains, FO2, FO3 and MO2. The percentage of accuracy and percentage of errors for L1 and L2 pre treatments, the treatments and the post treatments are

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shown. Each individual's target language is indicated. The levels of text read in English represent the Alberta Diagnostic Reading Inventory text levels.

TL = Target Language
Fr = French Eng = English
Treat = Treatment
Pre Treat = Pre Treatment
Post Treat = Post Treatment
RW = Running Words
E = Errors
SC = Sélf Corrects
% A = Percentage of Accuracy
% E = Percentage of Errors

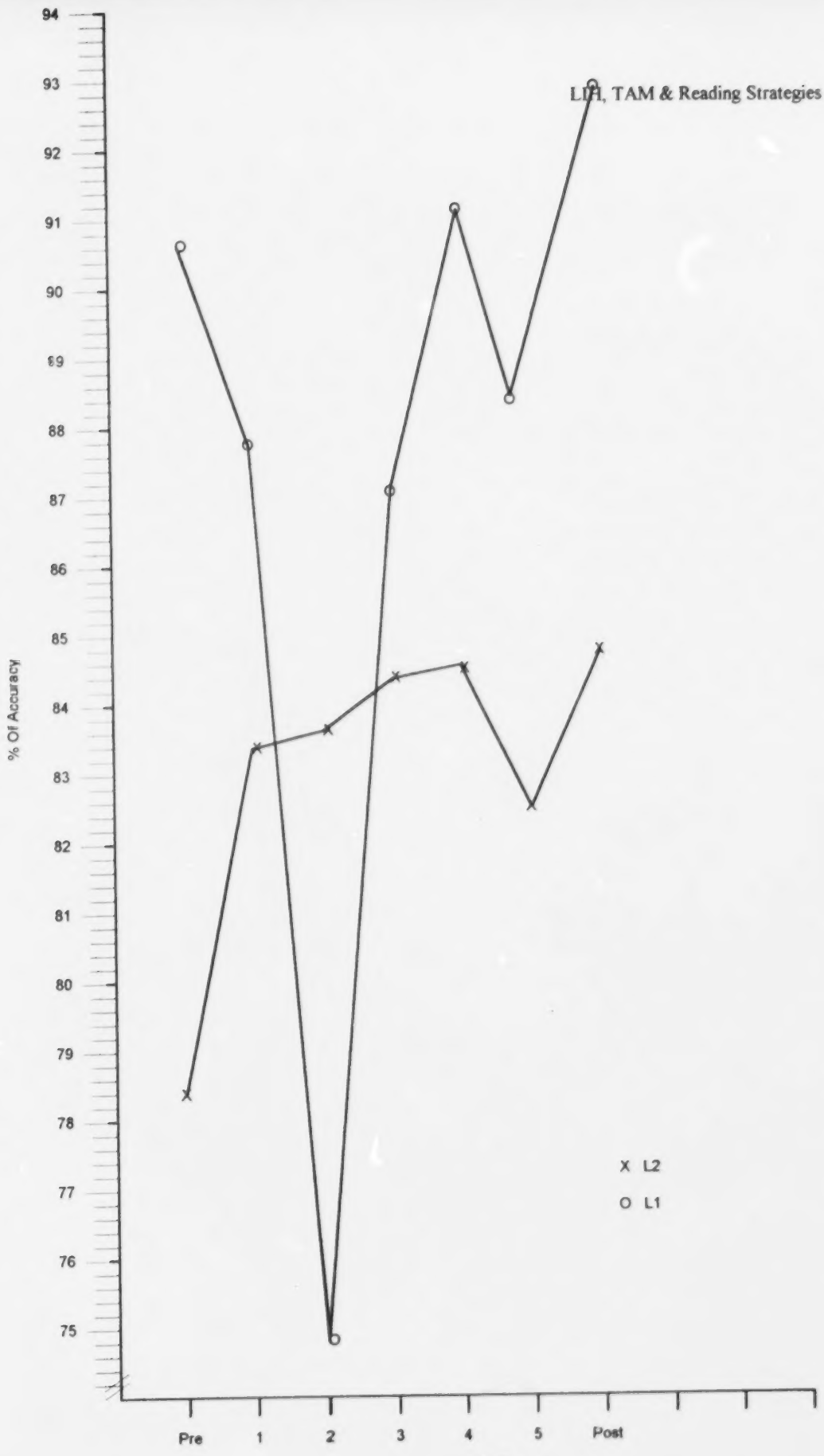
	Pre Treat Fr	Pre Treat Eng	Treatments 01 Fr	02 Eng	03 Fr	04 Eng	05 Fr	06 Eng	07 Fr	08 Eng	09 Fr	10 Eng	Post Treat Fr	Post Treat Eng
F02														
TL: Fr														
RW	253	175	143	198	151	210	103	186	158	141	153	187	325	159
E	92	25	31	65	11	41	33	52	45	21	39	50	64	19
SC	1	3	0	0	0	1	2	2	2	1	1	0	3	2
%A	64.031	87.428	78 321	67.171	92.715	80.952	69.902	73.118	72.784	85.815	75.163	73.262	81.230	89.08
%E	35.968	12.571	21.678	32.828	7.284	19.047	30.097	26.881	27.215	14.184	24.836	26.737	18.769	10.691
Text		2B-2												4C-N

	Pre Treat Fr	Pre Treat Eng	Treatments 01 Fr	02 Eng	03 Fr	04 Eng	05 Fr	06 Eng	07 Fr	08 Eng	09 Fr	10 Eng	Post Treat Fr	Post Treat Eng
F03														
TL: Fr														
RW	253	181	143	198	151	210	103	186	158	141	153	187	325	167
E	61	42	28	42	45	37	20	57	31	24	39	38	68	31
SC	11	9	3	3	0	7	3	10	0	1	0	3	5	4
%A	80.237	82.446	82.517	80.303	70.198	85.714	83.495	74.731	80.379	83.687	74.509	81.283	80.615	83.832
%E	19.762	17.553	17.482	19.696	29.801	14.285	16.504	25.268	19.620	16.312	25.490	18.716	19.384	16.167
Text		3B-2												3C-2

	Pre Treat Fr	Pre Treat Eng	Treatments 01 Fr	02 Eng	03 Fr	04 Eng	05 Fr	06 Eng	07 Fr	08 Eng	09 Fr	10 Eng	Post Treat Fr	Post Treat Eng
M02														
TL: Eng														
RW	253	188	143	198	151	210	103	186	158	141	153	187	325	186
E	33	70	9	72	41	48	6	51	15	29	17	52	22	47
SC	4	5	1	1	10	1	3	6	1	4	2	1	5	5
%A	88.537	65.425	94.405	64.141	79.470	77.619	97.087	75.806	91.139	82.269	90.196	72.727	94.769	77.149
%E	11.462	34.574	5.594	35.858	20.529	22.380	2.912	24.193	8.860	17.730	9.803	27.272	5.230	22.580
Text		3B-2												3A-2

Table 2 presents the percentages of accuracy and error of the three students for the five treatments and the pre and post treatments in both L1 and L2 over the duration of the study. All six participants in the study experienced positive gains in reading accuracy in their target language as indicated by the pre and post treatment scores. Of note are the pre and post treatment scores for FO2 and MO2 who made significant improvements in their target language. FO2 increased her percentage of accuracy in reading by 17.199% and MO2 increased his percentage of accuracy in reading by 11.724%. FO2 also increased her L1 reading ability by two years. She was reading at a Grade Two level with 87.428% accuracy at the beginning of the study and at the end of the study she was reading at a Grade Four level with 89.08% accuracy.

Figure 1. Mean percent accuracy over the six participants' treatments, including pre and post treatment scores.


94
93
92
91
90
89
88
87
86
85
84
83
82
81
80
79
78
77
76
75
% Of Accuracy
Pre
1
2
3
4
5
Post
X L2
O L1

Composite scores were tabulated and are represented in the graph as mean averages for the percent of accuracy in reading. The scores indicate a positive increase in both L2 and L1 reading accuracy skills over the duration of the study. All students experienced positive gains in reading accuracy in their target language. Only FO1 showed a decrease of .947% in her L1 pre and post treatment scores. This may be attributed to her lack of familiarity with the text topic during the post treatment reading. She did, however, show consistency in her scores throughout the treatments.

ANALYSIS

Establishing Validity Through Inter-Rater Reliability

Three passages were selected for their varied response characteristics and were coded by an outside source. One passage was coded for practice and the other two to measure inter rater reliability. The person chosen to complete this coding was trained in the use of think alouds and had conducted evaluations with think alouds with Primary level students in both English and French. It was important to have a practicing classroom teacher verify the coding procedure to ensure that it would be easy for teachers to use.

The teacher that verified the strategy coding did so by following these steps:

1) Gaining familiarity with the bottom-up and top-down reading strategies by reviewing the descriptions and samples of the 17 comprehension and repair strategies;

2) Practicing coding one treatment (Treatment #5, French text 03 with participant F03) with guidance through discussion as to how the researcher categorized certain utterances and the opportunity to clarify how we each interpreted the strategy;

3) Coding two L2 treatments independently (Treatment #9, French text 05 with participant F02, and treatment #4, English text 02 with participant M02); and

4) The researcher reviewed the written transcripts with the taped oral reading playing in order to score the strategy usage a third time for purposes of standardizing the scores.

The outcome was positive in that the counts for the number of times each strategy was used produced similar patterns. The few discrepencies there were were negotiated through discussion of the interpretation of how the strategy in question was being used by the student or the teacher/researcher.

Coding for processing during initial reading and language uptake was done with the verbal protocol taken while the participants were reading the passages the first time. This involved counting the vocabulary targeted in corrective feedback given on-line during the initial reading and which was present again in the retrospective phase of the text topic discussion analysis.

The tapes of the initial reading of the passages in the participants' L2 were reviewed using 1) the completed strategy count sheets (from Table 1) and 2) two colors of ink to indicate whether the participant or the teacher/researcher initiated the strategy usage. The same teacher who validated the original strategy use component of this study coded a sample L2 treatment for language processing and uptake. Her coding revealed identical classifications for top-down strategy use and recoding, and similar counts for bottom-up strategy use. The only discrepancies were found in 1) placing certain words in either the "examining word parts" or the "sounds out phonetically" categories, and 2) in deciding whether the student initiated the strategy use by examining particular words they did not immediately recognize, thus producing a prolonged silence, or whether the teacher/researcher had allowed for what they thought was a long enough wait time to pass before intervening. Anectdotal comments were also gathered during the five L2 treatments on the following: 1) learner initiated strategy uses; 2) learner generated response types and 3) teacher/researcher roles in discussions.

DISCUSSION

Six main findings were revealed in this study. First, the percentage of accuracy in reading in the target language for all six of the participants increased between the pre-treatment and post-treatment readings. As achievements in either language represent mixed results of increased facility in the two languages and with both L1 and L2 literacies, the percentage of

accuracy in reading in the L1 would supposedly have increased to the same scale as in the L2. That, however, was not the case, as differences in percentages of accuracy were greater in the second language for all participants. One student actually decreased the percentage of accuracy in her first language from the pre-treatment to the post-treatment score.

Secondly, the scores for percentage of accuracy in reading fluctuated according to the learners' prior knowledge about the topic of the reading passages in both their L1 and L2. Part of the information gathered on the miscues and comprehension difficulties (Appendix A) includes asking the student about their familiarity with the topics. In reviewing the level of familiarity with the text topic, there is a direct correspondence in the relationship between the comprehension of printed input and background knowledge.

Thirdly, two changes in the use of bottom-up strategies were noted. First, the use of recoding occured more frequently, over all, while participants read in their L2. F02 did not recode any more in one language than another. This may suggest a difference in learning styles, with some learners being more auditory and verbal than visual, yet may also reflect F02's low functioning in both languages. Second, translating or matching words in another language occurred more often while reading in an L2. The students made more predictions about the text topic in their L2 as the treatments progressed.

Fourth, with regards to top-down reading strategies, the frequency of referencing sentence-level context was higher overall when reading in an L2 than when reading in an L1 for all three participants who made the most gains.

Fifth, there is a predominant tendency for the participants to 1) relate to their background knowledge, 2) create more images and 3) retrace the text development more frequently when reading in their L1 than in their L2. This was determined through tabulating the strategies used as the text processing took place and as the responses about each new part of the text were formed in both languages (i.e. coding the initial tape recording). Increased use of these three strategies in the target languages was not consistent over the three months during which the treatments took place; however, it did occur on a regular basis when the participants were more

confident in their ideas about what they understood the text topic to be (Appendix A under "Reflection"). In this vein, the lowest of the three emergent readers substantially increased the number of guesses she made about the text topic in the latter half of the study.

Lastly, two reliable patterns were revealed in the processing component of the study: 1) increased independent bottom-up strategy use on behalf of the participants, and 2) a general tendency for slightly higher student-initiated strategy use--more particularily for top-down strategy use when the level of familiarity with the text topic prior to reading was lower or non-existant.

The presentation of a variety of text topics allows for the identification of topics which the learner is familiar with. The cultural relevance of topic familiarity may restrain or influence L2 output such that the less familiar the learner is with the topics, the more text dependent the reader becomes. This may cause the readers to search for any written material which is even remotely familiar to them in their quest to make sense of what they read. The slight increase in student-initiated strategy use for topics with which readers had medium to low or no familiarity over a three month period may be attributed to this quest to make sense of the text. The use of material that is familiar to the learner from both a language and a concept perspective will cause the reader to reference their schema and read at their own level. The use of material slightly unfamiliar to the reader and which linguistically challenges the reader sufficiently to trigger their use of bidirectional reading strategies sets the affirmation process in motion. In other words, the reader wants to know whether his or her guess is accurate or not and tries to link the ideas between passages together in an effort to justify his or her ideas. Having the readers verbalize their rational and reflect on their process of reading and problem solving in these circumstances allows for the richest context for linguistic and cognitive gains.

The Development of Comprehension and Repair Strategies

The coding of the comprehension and repair strategies was time consuming, however it permitted an accurate assessment and classification of the type of reading strategies employed. The outcomes of the current study support student gains in developing the skills which effective

readers activate, namely (a) identifying the important aspects of a message, (b) monitoring ongoing activities to determine whether comprehension is occuring and (c) taking corrective action when failure in comprehension was detected. Figure two depicts the development of reading and language skills based on these data.

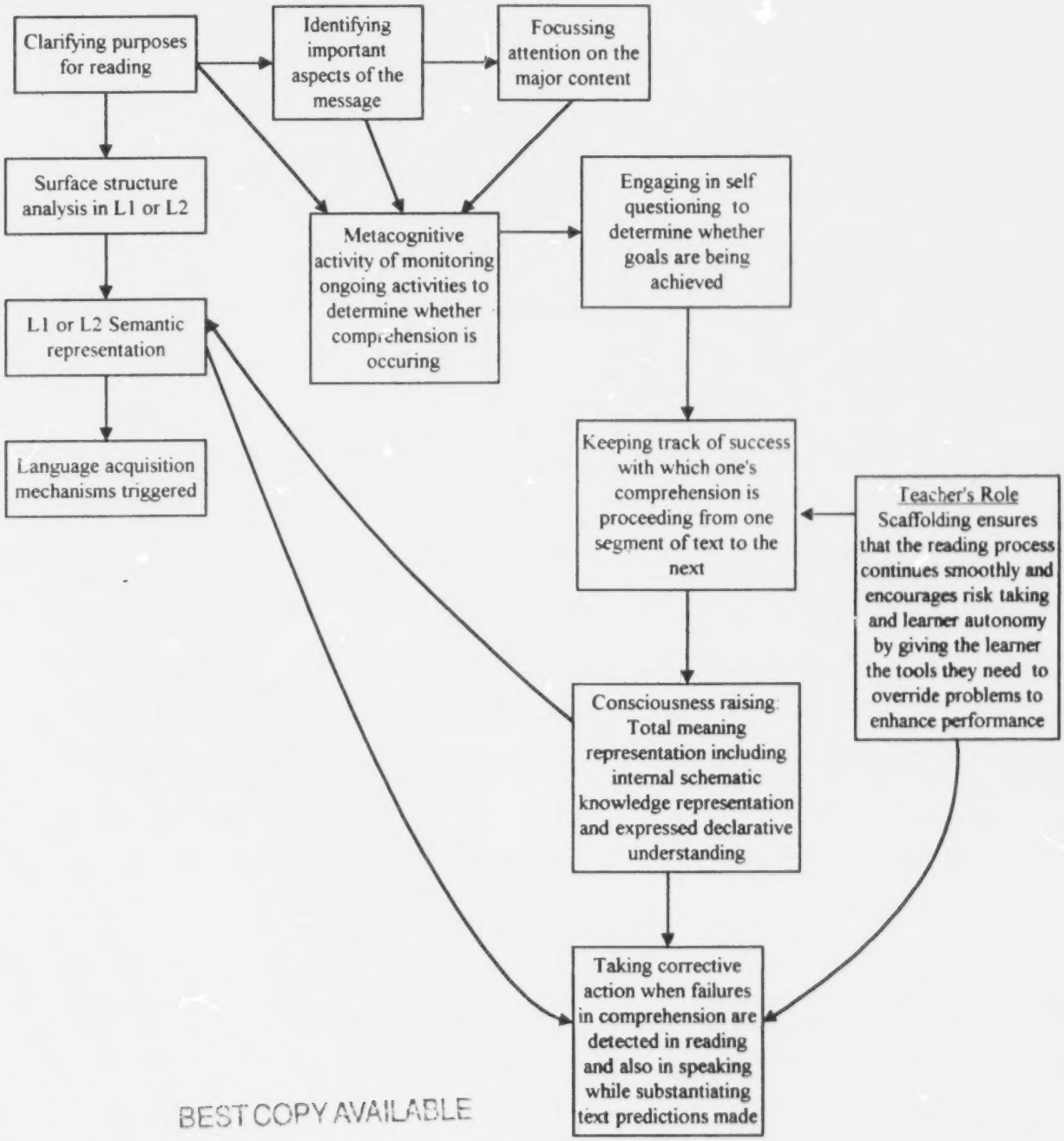

Clarifying purposes for reading
Identifying important aspects of the message
Focussing attention on the major content
Surface structure analysis in L1 or L2
Metacognitive activity of monitoring ongoing activities to determine whether comprehension is occuring
Engaging in self questioning to determine whether goals are being achieved
L1 or L2 Semantic representation
Language acquisition mechanisms triggered
Keeping track of success with which one's comprehension is proceeding from one segment of text to the next
Teacher's Role
Scaffolding ensures that the reading process continues smoothly and encourages risk taking and learner autonomy by giving the learner the tools they need to override problems to enhance performance
Consciousness raising: Total meaning representation including internal schematic knowledge representation and expressed declarative understanding
Taking corrective action when failures in comprehension are detected in reading and also in speaking while substantiating text predictions made

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Figure 2: LIH, TAM & Reading and Language Skills Development

Three other means of tracking the development of reading strategies were used during this study. Firstly, the pre and post treatment interviews gave the researcher a general impression of which strategies the readers use from their own perspective. Despite having highly focussed questions, the use of interviews was not found to give a clear indication of when or how reading strategies are being implemented, thus the level to which the outcome of the interview may be used to guide the intervention program is questionable.

Second, ongoing analysis of the strategies employed by the participants throughout the treatments by means of post reading reflections during the post intervention interviews brought the usage of certain strategies to a level at which the participants could consciously discuss them. The learner's growing awareness of the terminology helped establish a more concrete representation of the processes, as was evident under the sections "reflection" and "students' self observations" (Appendix A). This finding helps demystify the question about the value of developing a learner profile of students' metacognitive knowledge for the task at hand in a particular setting. Enhancing learners' awareness of strategy usage that works for them supports the practice of self assessment with the aim being to increase learner autonomy. If the classroom teacher's assessment that five of the six students were continuing to make steady progress in reading related areas of the curriculum five months after the study was completed was accurate, their progress may at least be partially due to the transfer of the comprehension and repair strategies to other learning situations.

Lastly, the questionnaire the parents of the participants completed regarding their perceptions of their child's gains was staged in two parts. In the first section the parents were asked to indicate the practices they noticed their children using since beginning the treatments. Overall, parents noted improvement in 1) decoding, 2) expression and 3) a more positive attitude to reading.

Metacognition and Metalinguistic Strategies

The use of a combination of introspective analysis of errors made while engaged in oral reading plus reflective think alouds has been found to have a positive impact on second language learners' use of reading strategies. Asking L2 learners to attend to their language use through the analysis of their own errors and through the use of reflective think alouds facilitated language uptake and, in turn, helped them increase their vocabulary, thus improving their overall oral output. This finding only partially supports current trends in the study of processing instruction (see VanPatten & Oikkenon, 1996; and VanPatten & Cadierno, 1993) in that for any significant gains to be made, a combination of structured input activities and explicit explanations are required for learners to access the benefits of instruction. Natural language input for promoting general comprehension and discourse competence and structured input focusing on form or analytic teaching need not be introduced as though these language skills were at opposite ends of a spectrum. The present study promotes the use of explicit instruction in processing information as it is key to having learners make form-meaning connections with any input. Furthermore, explaining points as students progress through an activity helps to ensure adequate transfer of information at their individual point of need.

In support of the observation made in this study regarding the increase of reading skill usage, the development of reading skills may be best described by Pressley and Afflerbach as they explain "(t)here is nothing fixed about constructively responsive reading, with (all) readers flexibly, opportunistically, and appropriately using the many procedures that comprise skilled reading ...it is a mistake to execute reading processes in a particular order." (1995, p. 114).

In this study, the development of reading strategies and the treatment of incoming information is seen as being contained in a single information store, as is the premise of the LIH. The process of analysing the surface structure of a text in either language and calling upon one's schema to interpret what is read suggests that information has a meaning-based representation and would be stored as declarative knowledge to be expressed through either language. In effect, when a bilingual learner reads a segment of text, accesses schematic knowledge, predicts

what the topic is about or what the story line is--depending on the text genre, reads further along, accepts and builds on the notion they have formed or rejects the idea and begins again; they do so by accessing non-language-specific meaning. Their previous experiences, level of topic knowledge, cognitive maturity and language development all play a role in determining the schema they create and their ability to express their text interpretation. In a Vygotskian framework (Bodrova & Leong, 1996, p. 31), the teacher's role is one of guide in triggering metacognitive and metalinguistic checks until the learner is able to initiate these filtering and assessment measures independently. The aim behind this scaffolding is to enhance learner autonomy so that the learners are able to control the transfer, monitoring and evaluation of the use of reading skills. A similar process is assumed to occur with output; reviewing explicit use of terms, arrangement of ideas and overall production enhances automated corrective measures when errors are made in speaking. Again, the goal behind this scaffolded interaction is to arm the learners with strategies for overriding difficulties in expressing themselves, such as with referal to L1 or refering to the text to support their hypotheses or to retrace the text development. In activating attention at the intake and output stages of dealing with any new information, the learner is pushed to link ideas at the cognitive level, to associate language with these ideas and thus automatically process the new information. In other terms, parallel processing occurs simultaneously with parallel skill building in the cognitive and linguistic modes. The metacognitive and metalinguistic functions of introspective and reflective think alouds then fulfill their roles in enhancing academic and linguistic performance.

TAM & LIH

TAM enables a closer inspection of the notion of interactive reading--that is the interaction between the reader and the text. Lee and VanPatten refer to McNeil's metaphor of text being a "blueprint for meaning" (Lee & VanPatten, 1995, p. 192), whereby a blueprint guides the construction of a building but it is not the building. Similarily, "the text guides comprehension but is not comprehension. The reader takes the text and gives it meaning" based on the schema they develop as they read. In reviewing the responses of the three weakest

learners in the current study, their interpretation of text was not always accurate. Background knowledge about the topics read during the ten treatments in this study was measured through pre and post reading interviews. The general tendency for slightly higher student-initiated strategy use when the level of familiarity with the text topic prior to reading was medium, low or non-existant suggests that the language used to interpret what they read plays a lesser role than does their prior experience.

Comprehension, in this context, is considered the process of relating new or incoming information to information already stored in memory. Positive implications of this on L2 learning involve using topic and background knowledge to encourage language learners to read and then to use teachable moments to explain new vocabulary or structures as the readers come across language which is new or difficult to interpret. The ability of learners to review what they have read to identify ideas which support their text topic hypotheses and their ability to check for comprehension can be built up in both languages. Evidence from the three lowest functioning readers' growth in both their L1 and L2 reading supports the Cummins LIH in that reading comprehension skills are not reacquired in the target language but rather are available upon need to repair and redirect reading.

The current study differs from other studies in that the scores reflect a process based interactive approach to reading with any gains made in either their L1 or L2 referenced to the individual reader's previous knowledge of the text topic and their growth in developing both bottom-up and top-down processing skills. A minimum threshold of bilingual competence needs to be met in order to purposefully and effectively apply reading skills in an L2 is suggested by the scores of one of the lowest functioning students. Not only is there a need for instruction in two languages but also a need for earlier means of detecting weaknesses in reading.

As comprehension involves an interaction of both reader-based and text-based factors, both of which are variable, it is imperative that the gains made in language acquisition, in reading abilities and in subject knowledge be discussed within the context in which the learning has taken place. Lower achieving L2 learners in an additive bilingual program benefited from

both 1) remedial reading intervention in both their L1 and their L2, and 2) the use of reflective think alouds combined with discourse analysis to enhance their awareness of language use, thereby improving their language uptake and output. Increased reading abilities had a positive influence on students' overall reading level as well as the added side benefits of improved self confidence in their own reading ability which purportedly would increase their general self esteem.

This study adds to the literature on verbal processing and opens the door to examining second language development at the point of uptake and naturalistic cognition in an early second language education setting. Together with learner self reports of their own development of reading strategies throughout the treatment phase as well as through comparasson of pre- and post-tests, the study of verbal protocol provides a wealth of information on the cognitive and affective processes used during reading. Like Pressley and Afflerbach's (1995) findings in 38 studies of how good readers process text, it may be concluded here that reading is constructively responsive--that developing beginner readers change their processing in response to the text they are reading, and furthermore, that the use of L1 text processing strategies can aid in developing text processing in an L2. The implication being that as emergent readers, there is a need for more scaffolded interaction in order for the readers to implement text processing skills independently. The outcomes of this study include direct evidence for the ability of the emergent reader to begin taking preventative actions in order to anticipate or recover from problems encountered as reading takes place. TAM has been applied here to study strategic processing and to explore individual differences. If verbal reports offer only a glimps at the reader's conscious, stated knowledge of cognitive processes, then discourse analysis rounds out the interpretation of the reader's complex text processing.

Implications for the development of remedial reading programs are far reaching. The use of TAM combined with discourse analysis is well suited to working individually with developing L2 learners. The evolving learner profiles created by using TAM and discourse analysis give credence to performance based forms of assessment and hold potential for promoting the use of

reading skills as students make the transition from learning to read to reading to learn at the late Primary and early Intermediate levels.

This study uses reading strategies as a check list in promoting learner awareness of their strategy usage and also purposely makes use of reflection while reading to promote idea synthesis. The structure of the texts used for the treatments differed from the pre- and post-tests, yet the results were positive for all participants in their development of L2 text processing. Practice in reading constructively and critically with one text structure was found to have some carry-over effects while reading a regularly structured narrative. This holds promise for the developing reader at the late Primary and early Intermediate levels in that the skills learned in text processing may be applied to core subject content analysis.

As a break from more traditional forms of evaluating reading comprehension, the use of TAM combined with discourse analysis has proven to be an effective and reliable measure of reading comprehension. TAM and verbal processing may be useful in determining a student's placement in a particular program as well as for the use of planning and implementing intervention and remediation as part of an independent education program.

IMPLICATIONS AND RECOMMENDATIONS

The current bilingual research project may be considered a step toward assisting L2 learners by promoting the development of reading strategies in both the learner's L1 and L2 in an effort to enable learners to learn in the language of their choice. What has proven to be successful on a small scale in this study would seem to be beneficial as part of an individually designed intervention program.

The full value of this bilingual interactive process approach to learning and to L2 development need not be limited to additive bilingual situations such as the French Immersion program. Its generalizability will undoubtedly include English as a second language and other second or third language education contexts.

As a means of promoting content learning in any target language, bilingual interactive processing using L1 to encourage the growth and development of skills in an L2 taps the less

visible and less easily measured aspects of language proficiency for cognitive academic tasks. This allows the learner easier access to the language needed for critical thinking, which in turn is needed for academic success. Increasing comprehension and sustaining verbal interaction during instruction may be realized by adopting such an approach with young learners.

Introspection and reflection on comprehension of topic development as well as strategies employed to repair reading difficulties have a positive effect on reading abilities and biliteracy development on the whole. In order to tap the potential of compound bilingualism and biliteracy, the goals of the Immersion program need to be revisited in order to set goals which all students may meet. The current study successfully addresses this need for a small number of students who potentially would be marginalized in the education system.

The current research partially fulfills what Rebuffot (1993, p.p. 197-199) described as the necessary reorientation of research to suit current practices such as the effect of integrating language and content instruction. Future developments in the area of remediation should continue to address the needs of the learners in light of long term objectives involving language development, content knowledge and literacy skills development. If only three months reinforcing basic reading skills could influence the study pool's general reading abilities and specific strategy use to the level it did, the potential which TAM in L1 and L2 holds in regular classroom practices and other remedial individualized educational programs is very strong in promise.

[1] Interested readers seeking a more detailed description of the procedure are referred to the original unpublished monograph under the title "Think-Alouds and Second Language Development: Using L1 as a Template for Enhancing Reading Comprehension" available through interlibrary loans from the Education Library, _____ University (1999).

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Appendix A

Observation sheet for taking a count of miscues and comprehension difficulties during reading sessions.

Name _____ Miscues and Comprehension Difficulties

Observation # ____ Text # ____ Title _____ Date _____

Reading Inventory of areas to work on in subsequent remedial sessions: sightwords, phonics, intonation, and the use of top-down, bottom-up and bi-directional strategies.

_____

_____

_____

Introspection Identifies miscues and self corrects:

____ with ease
____ gaining independence
____ with difficulty
____ not at all

number of words ____, errors ____, self-corrections ____

Reflection Familiarity with topic: high ___; medium ___; low ___; non existant ___

Shows comprehension (count):

____ uses examples from the text to extend or build on their ideas to sustain thinking and responding
____ integrates background experiences
____ visualizes to elaborate so as to integrate information
____ unsupported guesses

Shows confidence in figuring out what the text is about:

____ a high level of confidence
____ is developing confidence
____ lacks confidence
____ weak reading skills; cannot make sense of text

Other comments about this session:

_____

_____

Students' self observations on their progress:

_____

_____

Appendix B

Sample text to be used for reading treatments. The text is divided into three sections and is progressively presented to the participant.

Ces animaux sont de grands mammifères. Ils sont de couleur foncée et peuvent peser jusqu'à 250 kilogrammes. Leur queue mesure 15 centimètres ou moins. Ils ont un corps trapu, couvert de poils. Ils ont une mauvaise vue, mais ils peuvent entendre et sentir très bien. Ils habitent dans la forêt ou dans les buissons.

Ces mammifères mangent une grande variété de choses. Ils se nourrissent de petits mammifères, d'insectes, de n'importe quel animal mort, d'ordures, d'herbe, de feuilles, de baies et de noix. En automne, ils mangent beaucoup pour se préparer pour hiberner.

Les vieux comme les jeunes sont de bons grimpeurs et ils grimpent dans les arbres pour se mettre en sécurité. Quand il commence à faire froid et à neiger, ils cherchent un abri. Ils se trouvent une caverne, ou un tronc d'arbre creux où ils peuvent passer l'hiver dans un profond sommeil. D'habitude, les femelles ont des oursons pendant qu'elles hibernent.

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